

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see from PCT/ISA/210 (page 2)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION

See paragraph 2 below

International application No.
PCT/EP2005/050435

International filing date (day/month/year)
2/1/2005

Priority date (day/month/year)
2/24/2004

International Patent Classification (IPC) or both national classification and IPC
H04L12/40

Applicant

ROBERT BOSCH GMBH

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/
European Patent Office Munich

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Nold, M

Facsimile No.

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Form PCT/ISA/237 (cover sheet) (January 2004)
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EV 839 714 486 US

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/EP2005/050435

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/EP2005/050435

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-10	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-10	NO
Industrial applicability (IA)	Claims	1-10	YES
	Claims		NO

2. Citations and explanations:

see supplementaty page

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/EP2005/050435

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see supplementary page

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/EP2005/050435

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see supplementary page

WRITTEN ACTION
OF THE INTERNATIONAL
SEARCH AUTHORITY (SUPPLEMENT)

International File No.
PCT/EP2005/050435

Re: Section V

Substantiated Determination regarding the Novelty, Inventive Step, and Industrial Applicability; Documents and Explanations in Support of this Determination

1 Reference is made to the following documents:

D1: B. MÜLLER, T. FÜHRER, F. HARTWICH, R. HUGEL, H. WEILER, ROBERT BOSCH GMBH: "Fault Tolerant TTCAN Networks" PROCEEDINGS ICC 2002, 8TH INTERNATIONAL CAN CONFERENCE, [on-line] February 26th, 2002 (2/26/2002), XP002331424 LAS VEGAS, NEVADA found on the Internet:

URL:<http://www.semiconductors.bosch.de/de/20/can/3-literature.asp> [found on 6/9/2005]

D2: WO 03/036877 A (HARMAN/BECKER AUTOMOTIVE SYSTEMS GMBH; SCHOEPP, HARALD) May 1, 2003 (5/1/2003)

D3: THOMAS DOHMKE: "Bussysteme im Automobil CAN, FlexRay und MOST" [Bus Systems in the Automobile CAN, FlexRay and MOST] TECHNISCHE UNIVERSITÄT BERLIN, [on-line] March 2002 (3/2002), pages 1-22, XP002331425 found on the Internet:

URL:<http://thomas.dohmke.de/de/projekte/bussysteme> [found on 6/9/2005]

2 The present Application does not meet the requirements of Article 33(1) PCT, because the subject matter of **Claims 1-10** is not based on an inventive step within the meaning of Article 33(3) PCT.

2.1 Document **D1** is regarded as the most proximate related art to the subject matter of **Claim 1**. It discloses (the parenthetical references relate to this document):

A real-time, TTCAN bus system for applications in the automotive sector (1. Introduction), in which a plurality of redundant channels are used for transmitting information (3. Fault Tolerant TTCAN networks; Illustration 4) and, in this context, various messages can be transmitted on two different buses (4. Synchronization of TTCAN buses). In accordance with the TTCAN protocol, the information is transmitted in successive cycles over the data bus (Illustration 1), each cycle including at least one time window for transmitting information at specific points in time and at least one event window for transmitting information in response to specific events (2.1. TTCAN Basics).

Therefore, the subject matter of **Claim 1** is distinguished from the related art in **D1** in that no redundant transmission of the information transmitted in the time window over the power supply lines is disclosed.

Therefore, the object of the present invention can be regarded as enhancing fault tolerance in the automotive sector through the use of redundant buses.

One skilled in the art, when confronted with the aforementioned objective, would conduct research in the area of fault-tolerant bus systems for automotive applications and, in the process, would find publication **D2**, which describes a MOST data bus (page 1, lines 23-27), where, to enhance operational safety (page 1, lines 29, 30), the power supply lines are also used for

transmitting data (page 1, line 37 - page 2, line 2; page 2, lines 10-13), the data transmission rate on the power supply lines being selected to be lower than that on the data bus (page 2, lines 37, 38).

Taking into consideration the boundary condition from D1, that it is possible to transmit various messages (D1, 4. Synchronization) on the two redundant buses to achieve a partial redundancy (D1, 5. Conclusion) and the boundary condition from D2 that the path via the power supply line has a lower data transmission rate, one skilled in the art would additionally transmit only the time-critical information relevant to the fault tolerance over the redundant power line path in order to enhance the fault tolerance.

Thus, the related-art references suffice for inducing one skilled in the art to introduce the transmission via power supply lines in the automotive sector from **D2** into the subject matter of the **D1** publication, and to thereby arrive at the subject matter of **Claim 1** without applying an inventive step.

In summary, the same problem definition as recited in **Claim 1** is approached by additionally transmitting important time-critical data in parallel over the redundant power line circuit in order to achieve an enhanced fault tolerance.

Thus, the present Application does not meet the requirements of Article 33(1) PCT, because the subject matter of **Claim 1** is not based on an inventive step within the meaning of Article 33(3) PCT.

- 2.2 The subject matter of the independent method Claim 2 essentially corresponds to that of the independent Claim 1. Thus, the objections cited with regard to Claim 1 also apply to the independent method Claim 2, which, therefore, does not meet the requirements of the PCT with regard to inventive step.
- 2.3 The subject matter of the independent device Claims 6, 7 corresponds to that of the independent Claim 1 with respect to the device features. Thus, the objections cited with regard to Claim 1 also apply to the independent device Claims 6, 7, which, therefore, do not meet the requirements of the PCT with regard to inventive step.
- 2.4 The dependent **Claims 2-5, 8-10** do not include any features which, when combined with the features of any claim to which they relate, meet the requirements of the PCT with regard to an inventive step (Article 33(3) PCT). The subject matters of the dependent **Claims 2-5, 8-10** relate to method details, which can be derived either explicitly or at least implicitly from the aforementioned related art (D1: TTCAN, D3: Flexray, TTP) or which constitute standard measures that do not go beyond normal technical knowledge.

Re: Section VII

Specific Shortcomings of the International Application

- 2.5 The features known in combination with one another from D1 and D2 should be incorporated in the first part of the independent claim, in order for it to comply with Rule 6.3 b) PCT.

- 2.6 To meet the requirements of Rule 5.1 (a)(ii)PCT, documents D1 and D2 should be referred to in the Specification; the relevant related art contained therein should be briefly outlined.
- 2.7 When filing new claims, the introductory part of the Specification should be adapted to its wording.
- 2.8 Finally, care should be taken to ensure that the subject matter of the newly filed claims does not go beyond the subject matter of the Application in its originally filed version. To facilitate the examination of the amended Application documents in view of Article 34(2) b) PCT, with regard to the amendments made, whether they be additions, substitutions or deletions, the Applicant is requested to clearly indicate the passages in the originally filed Application that support these amendments.

Re.: Section VIII

Specific Remarks Regarding the International Application

- 3 The Application does not meet the requirements of Article 6 PCT, because Claims 1, 2, 6, 7 are not clear.
- 3.1 Claims 1, 2, 6, 7 were, in fact, drafted as separate, independent claims. However, they appear to actually relate to one and the same subject matter and obviously differ from one another only by variations in the definitions of the subject matter for which protection is claimed. Thus, the claims have not been concisely formulated, and they do not meet the requirements of Article 6 PCT.

3.2 The expression used in Claims 2, 7 that "... at least one portion of merely the information transmitted in the at least one time window ..." is vague and leaves the reader in the dark about the meaning of the technical feature in question. As a result, the definition of the subject matter of these claims is not clear (Article 6 PCT).